

August 2015

## Book Review: High G Flight - Physiological Effects and Countermeasures

Stefan Kleinke

Embry-Riddle Aeronautical University - Worldwide, [kleinkes@erau.edu](mailto:kleinkes@erau.edu)

Follow this and additional works at: <https://commons.erau.edu/ijaaa>



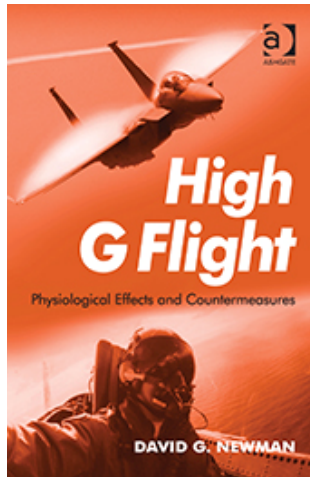
Part of the [Aerodynamics and Fluid Mechanics Commons](#), [Aeronautical Vehicles Commons](#), [Other Aerospace Engineering Commons](#), and the [Other Physics Commons](#)

---

### Scholarly Commons Citation

Kleinke, S. (2015). Book Review: High G Flight - Physiological Effects and Countermeasures. *International Journal of Aviation, Aeronautics, and Aerospace*, 2(3). Retrieved from <https://commons.erau.edu/ijaaa/vol2/iss3/5>

This Book Review is brought to you for free and open access by the Journals at Scholarly Commons. It has been accepted for inclusion in International Journal of Aviation, Aeronautics, and Aerospace by an authorized administrator of Scholarly Commons. For more information, please contact [commons@erau.edu](mailto:commons@erau.edu).



**Book:** *High G Flight - Physiological Effects and Countermeasures*

**Authors:** David G. Newman

**Publisher:** Ashgate Publishing Ltd

**Year:** 2015

**Book Price:** \$107.96

**eBook Price:** \$119.95

**Length:** 246 pages

**Read Time:** 9 hours

**Read Rating:** 3 – Average

**Book Rating:** 5 – Excellent

Dr. Newman, a veteran of aerospace medicine and aviation and medical research, and a pilot with experience in aerobatic airplane, as well as fast jet aircraft, presents a comprehensive overview of the high-G flight environment and its effects on the human body. While not a presentation of fundamentally new research or discoveries, his book exhaustively introduces the existing body of research and publication in the field and examines how previous findings support our current understanding of physiological effects in the high-G, as well as some of the low-G, flight environments. It successfully presents the collective knowledge about G related physiological effects and countermeasures in a clear, understandable, and accessible way.

The author's close attention to detail and his consistency in the use of terminology and physical relationships positively reflects on his work and allows the reader to follow the presented thought without major question or confusion. Figures and graphs are provided and effective in further enhancing the understanding of the text.

The book is divided into four main parts, providing a logical flow of discussion from origin and causes of G-related flight conditions in part one, over physiological effects of those conditions and tolerance and adaptation mechanisms in pilots in part two and three, to currently existing countermeasures against G effects in part four. In addition, an exhaustive list of references is provided, limiting the effective number of pages with presentation and discussion of the topic to 187 out of the total 246 pages. Therefore, reading of the book can easily be fit into any type of schedule and would allow full coverage within a standard academic term.

While a good introductory review of the physics involved in aircraft and spacecraft flight is presented in the first part, the author seems to be even more at ease with presenting medical relationships in the following two parts of the book. In that sense, the book is somewhat more accessible to the medically interested reader than the general aviation enthusiast. Nevertheless, the balance struck between discussion of flight physiological effects and underlying physical relationships within the flight environment is effective in providing a well-rounded overview of all aspects involved and allows even the less experienced reader access to the topic. However, while the book is neither intended nor written as a medical textbook, readers unfamiliar with medical terminology or details of the human anatomy and physiology should be cautioned that some additional referencing will be required. In this regard, it would be beneficial to a possible second edition to also include an explanation of terms section for easier reference.

The biggest drawback in this first edition is the presence of misprints and missing information. While few, some of the errors are in crucial places such as newly introduced equations and formula, referenced diagrams, or first time uses of terms and abbreviations. The reader should be aware of the existence of those errors and be prepared to mentally add the missing information.

The book could be considered for adaptation as a textbook in subject related courses in the field. However, to enhance student comprehension, a future edition will require elimination of first edition misprints, errors, and omissions and should include the above mentioned definition of terms section for student reference.

Overall, the book is a successful compilation of aerospace medical findings in G related research and a must read for anyone in the field of flight physiology and human factors or anyone exposed to the G-force environment of aerobatic airplane, military fast-jet, or spacecraft flight. Readers completely new to the field or unencumbered by the need to know can still enjoy a comprehensive first exposure to a multitude of aspects involved in high-G flight, as long as they are willing to invest some additional effort to fully understand the presented medical relationships.